AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the present application.

LISTING OF THE CLAIMS:

Claims 1 - 9. (Canceled).

10.   (Currently Amended) The ~~method~~ system according to claim 14 ~~9~~, wherein the maximum shearing stress ~~(τ_{max})~~ is a shearing stress along a neutral axis of the spring.

11.   (Currently Amended) The ~~method~~ system according to claim 14 ~~9~~, wherein the maximum shearing stress is a shearing stress along an axis ~~(F2)~~ of the spring nearest a longitudinal center axis ~~(A)~~ thereof.

12.   (Currently Amended) The ~~method~~ system according to claim 10, wherein the maximum shearing stress is a shearing stress along an axis ~~(F2)~~ of the spring nearest a longitudinal center axis ~~(A)~~ thereof.

13.   (Currently Amended) The ~~method~~ system according to claim 14 ~~9~~, the program further comprising instructions for performing the step of:
verifying, using the maximum shearing stress in the spring, that a maximum stress admissible by the spring has not been exceeded.

14.   (Currently Amended) A system for designing a nuclear fuel assembly which is intended to be positioned in a nuclear reactor, the assembly comprising a plurality of guide tubes and a control cluster which itself comprises a plurality of control rods which are received in the guide tubes and a support for the control rods, the assembly comprising a helical spring for damping an impact of the support against an upper end piece of the assembly in an event of the control cluster falling during a shutdown of the nuclear reactor, the system comprising a computer and a storage arrangement configured to store at least a program comprising instructions for performing the following steps of designing a nuclear fuel assembly:

a first arrangement configured to establish establishing a progression of speed of a the control cluster after the an impact of the a support against the an upper end piece;

a second arrangement configured to establish establishing, based on the speed of the control cluster after the impact of the support against the upper end piece, a maximum longitudinal load for compression of the a spring; and

a third arrangement configured to establish establishing, based on the maximum longitudinal load for compression of the spring, at least a maximum shearing stress in the spring.

15.   (Canceled).

16.   (Currently Amended) A computer-readable medium encoded with executable instructions for designing a nuclear fuel assembly which is intended to be positioned in a nuclear reactor, the assembly comprising a plurality of guide tubes and a control cluster which itself comprises a plurality of control rods which are received in the guide tubes and a support for the control rods, the assembly comprising a helical spring for damping an impact of the support against an upper end piece of the assembly in an event of the control cluster falling during a shutdown of the nuclear reactor, the encoded instructions executable by a computer to An article of manufacture comprising:

an arrangement configured to establish a progression of speed of the control cluster after the impact of the support against the upper end piece, ;

establish, based on the speed of the control cluster after the impact of the support against the upper end piece, a maximum longitudinal load for compression of the spring; and

establish, based on the maximum longitudinal load for compression of the spring, at least a maximum shearing stress in the spring the article of manufacture configured to be read by a computer.